Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A linear compensation system, comprising:

a transmitting unit configured to modulate a data to a first intermediate frequency (IF) signal, up convert the first IF signal to an RF signal, amplify the RF signal to a predetermined level using a power amplifier (PA) and transmit the amplified RF signal; and

a linear compensation unit configured to vary a step size of an adaptive equalizer according to whether a signal-to-noise ratio (SNR) for an output signal of the PA satisfies a prescribed standard, and output a selected linear compensation coefficient to the modulator,

wherein the linear compensation unit computes error values by determining differences between output values of the adaptive equalizer and a reference signal, computes an average error value of the computed error values, and variably varies the step size of the adaptive equalizer until a current error value is less than a predetermined value of a previous error value.

2. (Original) The system of claim 1, wherein the prescribed standard comprises a standard of the advanced television system committee, and wherein the linear compensation system is for use in a digital TV relay.

3. (Original) The system of claim 1, wherein the linear compensation unit comprises:

a correction circuit configured to demodulate the output signal of the PA into a digital I/Q signal; and

a computer configured to update the step size of the adaptive equalizer according to one of the SNR of the digital I/Q signal and an error vector magnitude (EVM) and further configured to generate the selected linear compensation coefficient.

4. (Original) The system of claim 3, wherein the correction circuit comprises:

a down-converter configured to convert the output signal of the PA into a second IF signal; and

a demodulator configured to demodulate the second IF signal outputted from the down-converter into the digital I/Q signal.

5. (Currently Amended) The system of claim 3, wherein the computer comprises:

a linear compensation module having [[an]] the adaptive equalizer, configured to convert coefficients of the adaptive equalizer and output a linear compensation coefficient and further configured to update the step size of the adaptive equalizer according to one of the SNR and the EVM of the digital I/Q signal outputted from the correction circuit; and

an automatic alarm signal generator configured to control an operation of the adaptive equalizer and the linear compensation module.

6. (Original) The system of claim 5, wherein the linear compensation module comprises software.

7. (Original) The system of claim 5, wherein the automatic alarm signal generator is configured to generate an automatic alarm signal to drive the adaptive equalizer if a first SNR of the digital I/Q signal does not satisfy the prescribed standard.

8. (Currently Amended) The system of claim 7, wherein the automatic alarm signal generator updates the current error value average as the step size of the adaptive equalizer if [[a]] the current error value average is not smaller than [[a]] the previous error value average by more than [[a]] the predetermined ~~percent~~ value after the automatic alarm signal is generated, and wherein the automatic alarm generator sets the current error value average as the step size of the adaptive equalizer if the current error value average is smaller than the previous error value average by more than the predetermined ~~percent~~ value.

9. (Original) The linear compensation system of claim 8, wherein the automatic alarm signal generator computes one of the SNR and the EVM for the output value of the adaptive equalizer when the step size is set, and stops the operation of the adaptive equalizer and operates the linear compensation module if one of the SNR and the EVM satisfy the standard for a predetermined consecutive number of times.

10. (Currently Amended) A linear compensation system, comprising:

a transmitting unit configured to modulate an image data to a first intermediate frequency (IF) signal, up convert the first signal to an RF signal, amplify the RF signal to a prescribed level using a high powered amplifier (HPA), and transmit the amplified RF signal;

a correction circuit configured to convert the output signal of the HPA to a digital I/Q signal; and

a computer configured to receive the digital I/Q signal outputted from the correction circuit, update a step size of an adaptive equalizer according to one of ~~an SNR~~ a signal-to-noise ratio (SNR) for the output signal of the ~~adaptive equalizer~~ HPA and an error vector magnitude value (EVM), and output a linear compensation coefficient,

wherein the computer computes error values by determining differences between output values of the adaptive equalizer and a reference signal, computes an average error value

of the computed error values, and variably varies the step size of the adaptive equalizer until a current error value is less than a predetermined value of a previous error value.

11. (Original) The system of claim 10, wherein the correction circuit comprises:

a down-converter configured to convert the output signal of the HPA into a second IF signal; and

a demodulator configured to demodulate the second IF signal outputted from the down-converter into the digital I/Q signal.

12. (Currently Amended) The system of claim 11, wherein the computer comprises:

a linear compensation module having [[an]] the adaptive equalizer, and configured to convert coefficients of the adaptive equalizer and output the linear compensation coefficient; and

an automatic alarm signal generator configured to update the step size of the adaptive equalizer according to one of the SNR and the EVM of the digital I/Q signal outputted from the correction circuit, and further configured to control operation of the adaptive equalizer and the linear compensation module.

13. (Original) The system of claim 12, wherein the linear compensation module comprises software.

14. (Original) The system of claim 12, wherein the automatic alarm signal generator generates an automatic alarm signal to drive the adaptive equalizer if the SNR of the digital I/Q signal does not satisfy a standard.

15. (Original) The system of claim 14, wherein the standard comprises a SNR prescribed by the advanced television system committee.

16. (Currently Amended) The system of claim 12, wherein the automatic alarm signal generator updates [[a]] the current error value average as the step size of the adaptive equalizer if the current error value average is not smaller than [[a]] the previous error value average by more than [[a]] the predetermined ~~percent~~ value after an automatic alarm signal is generated, and further fixes the current error value average as the step size of the adaptive equalizer if the current error value average is smaller than the previous error value average by more than the predetermined ~~percent~~ value.

17. (Original) The system of claim 16, wherein the automatic alarm signal generator computes one of the SNR and the EVM for the output value of the adaptive equalizer when the step size is fixed, and stops the operation of the adaptive equalizer and operates the linear compensation module if said one of the SNR and the EVM satisfy a standard for a predetermined consecutive number of times.

18. (Original) The system of claim 17, wherein the standard comprised a standard of the advanced television system committee.

19. (Canceled)

20. (Currently Amended) The method of claim [[19]] 21, wherein the standard comprises a standard of the advanced television system committee.

21. (Currently Amended) ~~The method of claim 19~~ A linear compensating method in which an image data is modulated into an intermediate frequency (IF) signal by a modulator, converted to an RF signal, amplified to a prescribed level and outputted by an HPA, comprising:

determining whether a first SNR for an output signal of the HPA satisfies a standard;

computing an error value average for an output signal of an adaptive equalizer;

fixing the computed error value average as a step size of the adaptive equalizer when the computed error value average is in a predetermined range;

computing a second SNR; and

converting a coefficient of the adaptive equalizer and compensating a non-linearity of the HPA where one of the second SNR and the EVM satisfy the standard by more than a predetermined number,

wherein the predetermined range is less than a predetermined ~~percent~~ value of a previous error value average.

22. (Currently Amended) ~~The method of claim 19~~ A linear compensating method in which an image data is modulated into an intermediate frequency (IF) signal by a modulator, converted to an RF signal, amplified to a prescribed level and outputted by an HPA, comprising:

determining whether a first SNR for an output signal of the HPA satisfies a standard;

computing an error value average for an output signal of an adaptive equalizer;

fixing the computed error value average as a step size of the adaptive equalizer when the computed error value average is in a predetermined range;

computing a second SNR; and

converting a coefficient of the adaptive equalizer and compensating a non-linearity of the HPA where one of the second SNR and the EVM satisfy the standard by more than a predetermined number,

wherein computing an error value average comprises:

converting the output signal of the HPA into a digital I/Q signal;

comparing the digital I/Q signal with a reference signal and computing the first SNR;

determining whether the first SNR as computed satisfies the standard;

driving the adaptive equalizer if the first SNR does not satisfy the standard; and

producing error values for the output signal of the adaptive equalizer and computing an average value of the produced error values.

23. (Currently Amended) ~~The method of claim 19~~ A linear compensating method in which an image data is modulated into an intermediate frequency (IF) signal by a modulator, converted to an RF signal, amplified to a prescribed level and outputted by an HPA, comprising:

determining whether a first SNR for an output signal of the HPA satisfies a standard;

computing an error value average for an output signal of an adaptive equalizer;

fixing the computed error value average as a step size of the adaptive equalizer when the computed error value average is in a predetermined range;

computing a second SNR; and

converting a coefficient of the adaptive equalizer and compensating a non-linearity of the HPA where one of the second SNR and the EVM satisfy the standard by more than a predetermined number,

wherein computing the second SNR comprises:

determining whether a current error value average is less than a predetermined value of a previous error value average;

computing one of the second SNR and the EVM using the output signal of the adaptive equalizer if the current error value average is less then a predetermined value of the previous error value average; and

setting the current error value average as the step size and updating the coefficient of the adaptive equalizer if the current error value average is not less than the predetermined value of the previous error value average.

24. (Original) The method of claim 23, wherein the second SNR is computed by the following mathematical equation:

$$SNR = 20\log\left(\frac{\sum_{k=0}^{n-1}\sqrt{ref^2/k}}{\sum_{k=0}^{n-1}\sqrt{(ref - input)^2/k}}\right) \text{ ----------------------------- equation (1)}$$

25. (Original) The method of claim 23, wherein the EVM is computed by the following mathematical equation:

$$EVM = \left[10^{\frac{393-SNR}{20}}\right]\% \text{ --- equation (2)}$$